

CORRELATION OF MATERNAL AND FETAL HEMOGLOBIN (HB) ADDUCTS IN SMOKERS WITH RESPECT TO GENOTYPE

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Of all the avoidable risks for adverse pregnancy outcomes, cigarette smoking is the most important and obvious. Cigarette smoke affects the primary user, the mother, but also, the fragile fetus. It has been estimated that between fifteen and thirty percent of pregnant women in the United States smoke during pregnancy. Furthermore, Kentucky regularly ranks among the states with the highest percentage of pregnant smokers with twenty-three percent, a close second to West Virginia while Utah ranks the lowest at approximately fourteen percent. These extremes may be attributable to cultural and agricultural differences between the populations of these states. In the current study, we correlated the level of hemoglobin adducts to 4-aminobiphenyl found in tobacco smoke. Maternal hemoglobin adduct levels were measured in subjects based on cotinine concentrations and specific genotypes of interest. Maternal subjects with cotinine levels 50 ng/ml who possessed a NAT1*10 allele had higher 4-aminobiphenyl hemoglobin adduct levels than subjects with the same cotinine levels who did not possess a NAT1*10 allele ($= 0.05$, $P < 0.13$). Maternal subject with cotinine levels 50 ng/ml who were NAT2 slow acetylators had slightly higher 4-aminobiphenyl hemoglobin adduct levels than subjects with the same cotinine levels who were NAT2 rapid or intermediate acetylators ($= 0.05$, $P < 0.52$). Maternal subject with cotinine levels < 5 ng/ml who were NAT2 slow acetylators had slightly lower 4-aminobiphenyl hemoglobin adduct levels than subjects with the same cotinine levels who were NAT2 rapid or intermediate acetylators ($= 0.05$, $P < 0.30$). These data suggest that the genetic polymorphisms of N-acetyltransferase may contribute to the variations in hemoglobin adduct levels seen in smokers, especially among the aromatic amines.